A solution of 3-component accelerograms inversion is obtained to determine the rupture history and the slip distribution for the Mw 6.3 earthquake occurred in central Italy on April 6, 2009. The method of linear programming is used for the inversion and the simplex method is applied to solve the linear programming problem (Das and Kostrov, 1994). For the numerical solution, the problem is discretized. All known parameters, such as crustal structure and station distribution are kept fixed and a large enough fault area is considered. For testing the robustness of the obtained slip inversions various rupture velocities are taken into account. Physical constraints such as the positivity of the slip rates on the fault and a pre-assigned seismic moment are used to stabilize the solution. Using synthetic data with a checkerboard slip distribution shows that the obtainable spatial resolution is 2 km. Observed records acquired from local stations of the national strong-motion network are inverted. Only data from rock stations distributed uniformly around the fault at epicentral distances less than 80 km are used. The accelerograms are filtered at 1 Hz and about 15 seconds of the signals are modelled. The obtained slip distribution shows a single major asperity and is in agreement with other similar studies of L’Aquila earthquake.